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LETTER

FROM THE

PRESIDENT OF THE BOARD

OF

CANAL COMMISSIONERS,

ACCOMPANIED WITH A COPY OF THE

MINUTES OF THEIR PROCEEDINGS

AND

COPIES OF CERTAIN DOCUMENTS

THEREIN REFERRED TO,

**RELATING TO FURTHER SURVEYS MADE UNDER THE AUTHORITY OF
THE BOARD, ON THE EASTERN END OF THE**

PENNSYLVANIA RAIL ROAD.

Read in the House of Representatives, March 31, 1829.

Harrisburg,

PRINTED BY SAMUEL C. STAMBAUGH.

1829.

REPORT, &c.

PENNSYLVANIA CANAL OFFICE,

Harrisburg, March 28, 1829.

HON. NER MIDDLESWARTH, *Speaker*
of the House of Representatives.

SIR—In obedience to the direction of the canal commissioners, I have the honor to transmit to you, for the information of the House, a certified copy from the minutes of their proceedings, and copies of certain documents therein referred to, relating to further surveys, made under the authority of the board, on the eastern end of the Pennsylvania rail road.

With great respect,

Your most obedient servant,

DANIEL MONTGOMERY.

At a meeting of the canal commissioners of Pennsylvania, on the 27th day of March, 1829.

The Secretary laid before the board, a report of his proceedings in regard to the termination of the Pennsylvania rail-way, at or near the city of Philadelphia, during the recess of the board, accompanied by a report of surveys made under his direction, by Messrs. Wilson, Robinson and Hopkins, engineers.

Whereupon the following resolutions, were unanimously adopted.

Resolved, That the measures adopted by the secretary, in procuring further surveys and examinations, in regard to the eastern termination of the Pennsylvania rail-way, the same having been adopted with the approbation of the president of the board, and in accordance with its uniform practice, be approved and confirmed.

Resolved, That the president be directed to transmit to both branches of the legislature, for their information, copies of the reports of the engineers and of the secretary, and all other documents connected with the subject.

From the minutes of the board.

JOS. M'ILVAINE, *Secretary*.

Report from Messrs. Wilson, Robinson and Hopkins, engineers.

JOSEPH M'ILVAINE, Esq.

Secretary to the board of Canal Commissioners.

SIR:—In compliance with your joint and separate instructions to us, on the 2d and 14th of January, and the 7th inst. we respectfully

REPORT:

First, as to the merits of a line crossing at Fairmount, as explained in your letter to the undersigned, Messrs. Robinson and Hopkins.

Such a line is perfectly practicable, but involves considerable difficulties. Two heavy embankments, a deep cut, and an unusual portion of rock excavation must be encountered. And in order to bring the rail-way by a gentle and easy curve on a bridge at the point proposed, it will be necessary to incur the expense and inconveniences of a tunnel 31 chains long, and 20 by 12 feet high.

In the event of the adoption of this line, it would be advisable to fall at the stationary engine at Judge Peters', ten feet lower than has been contemplated on the line reported by Major Wilson; and afterwards to continue on a horizontal plane to the summit, between the Delaware and Schuylkill. This profile is recommended, not because an undulating line or lower bridge at Fair-Mount would be inadmissible, but because no saving of expense would be produced by such a change, which would justify impairing the profile of this part of the line.

Should the location of the line reported by Major Wilson be confirmed, its graduation should in our opinion be so modified, as to attain an elevation 37 feet above high water, at a point 48 chains before reaching picket 42. This would be done in order to give it all the advantage it could have for a connexion with shipping on the Schuylkill, without reducing it below the level of the summit between this river and the Delaware. In this case, the line reported by Major Wilton, would, at the point alluded to, intersect with that crossing at Fairmount.

The following estimate of the line crossing at Fairmount by Mr. Hopkins, and the annexed abstract from the estimate of Major Wilson, of the line reported by him, present views of the cost of each route from the foot of the inclined plane to their point of intersection:

Estimate of line crossing at Fairmount.

50501	yards embankment at 12 cents	\$ 6060 00
12828	do of rock at \$ 1	12828 00
3396	do excavation above rock at 8 cts	271 00
22888	do do at 7 cts	1602 00
16215	do embankment at 9 cts	1459 00
19420	do excavation deep cut at 10 cts	1942 00
9702	do rock at \$ 1 25	12136 00
19163	do tunnel excavation at \$ 2 50	47907 00

428 perches masonry at \$2	856 00
9711 yards rock at 60 cts	5826 00
1614 do embankment at 9 cts	145 00
3500 do excavation at 8 cts	280 00
2 miles and 40.10 laying rails	24000 00

\$ 115,312 00

Bridge.

3 piers, 5467 cubic yards masonry, at \$ 5	23285 00
Abutment and wing-walls on east side of river, including arch for road, 3326 cubic yds at \$ 2 50	8315 00
Preparing rock for abutment on west side river	300 00
800 feet superstructure	24000 00

\$ 55,900 00

Cost of rail-way formation and laying rails	115,312 00
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\$ 171,212 00

Line reported by Major Wilson.

Amount of bridge embankment, and bridge across Schuylkill, as per estimate Pennsylvania rail-way,	50,591 04
Amount of excavation and embankment from the commencement of the old Union canal to point of intersection of lines,	2687 75
Additional expense of graduation to level of 37 feet above tide,	1000 00
Cost of laying rails on $2\frac{27}{80}$ miles of road-way,	18700 00

\$ 72,778 79

It appears from a comparison of the above estimates, that the increased cost of continuing the rail-road on the right bank of the river to Fairmount, and of crossing at that point would be \$97,433 21. The two lines, as regards a connexion with shipping on the east shore of the Schuylkill, and with the Delaware, present equal advantages.

But the lining crossing at Fairmount, offers a facility of connexion with tide water on the west shore of the Schuylkill, not afforded by the location of Major Wilson. On the other hand, the tunnel which will be required on this line, and the necessity of crossing at Fairmount in an exposed situation, by an oblique bridge present very strong objections to it.

Secondly, "as to the practicability and cost of a branch line from the inclined plane, near judge Peter's to a point on the sloop navigation of the Schuylkill, below the permanent bridge." Two lines have been examined with a view to this object: one following the trace of the line, crossing at Fairmount, until within half a mile of the proposed crossing point, here ascending a ravine nearly at right angles with the river, and passing back of Mantua

village, near the junction of the roads from the two bridges, and terminating opposite the permanent bridge.

A second passing along the bluffs and sloping shore of the Schuylkill, the whole distance from the foot of the inclined plane, to the first wharf below the said bridge. The first of these lines would involve the necessity of a brake at its point of termination, and either of the lines would be very expensive for a double branch on which a lesser radius of curvation, than that adopted on other parts of the rail-road, was deemed inadmissible.

For a single branch with occasional crossing places, on which greater were allowed, the trace adhering to the river slope would be preferable. "The branch line commences at the termination of the inclined plane at judge Peters', and is traced on the margin of the Schuylkill river for eighty-one chains, to a position beyond the residence of S. Breck, Esq. at a descending graduation of 30 feet per mile; from thence it is kept level for ninety-eight and a half chains, until it passes below the dam at Fairmount, and on the remaining part of the distance, which is sixty-one chains, the descending graduation is 24 feet per mile. Its termination is at a position south of the permanent bridge, and on a level with the wharf immediately below that bridge.

In locating this branch, the horizontal curves may be determined within the limits assigned for the main line, excepting at the projecting rock near the residence of Rundel, Esq. where the radius of curvature cannot, without a considerable addition to the cost of the road, be greater than 400 feet. In the present trace, the radius at this point is 378.2 feet, the interior angles of the sides of the polygon of sixty-six feet each, being ten degrees."

SECTION 1.

From the foot of the inclined plane, the line curves southwardly, and crosses with a balustrade bridge, a small run; from thence it pierces a point of side hill, 21 feet at the greatest depth, and is conducted along the slope hill, crossing in its course two runs, and encountering ledges of rock. The section terminates in front of the residence of S. Breck, Esq.

Embankment at end of plane on 13 chs. greatest depth, 14 ft. 6178 c. yards, at 15 cts.	926 70
Excavation on 8.20 chs. greatest depth 21.1 ft. 8826 c. yds. at 16 cts.	1412 16
Excavation on 9.75 chs. greatest depth 8 ft. 1735 c. yds. at 80 cts.	138 80
Embankment at run on 4½ chs. greatest depth 17 ft. 1884 c. yds. at 14 cts.	263 67
Excavation on 5 chs. greatest depth 5.3 ft. 503 c. yds. at 12 cts.	60 36
Embankment on 3¼ chs. greatest depth 3 ft. 464 c. yds. 12 cts.	55 68
Excavation on 7 chs. 484 c. yds. at 9 cts.	43 56

Side cutting solid rock on on 5½ chs. 248 c. yds. at 50 cts.	124
Embankment on 2 chs. greatest depth 14.6 ft 967 c yds at 12 cts	116 04
Excavation on 6½ chs greatest depth 14.2 ft 1158 c yds (side cutting) of rock at 50 cts & 1704 c yds of common excavation at 8 cts	716 12
Excavation of rock (side cutting) on 4.30 chs greatest depth 2.8 ft 1709 c yds rock at 50 cts & 1413 c yds common excavation at 8 cts	967 54
Embankment on 2 chs greatest depth 7 ft 251 c yds at 12 cts	30 12
Excavation on 8 chs greatest depth 6 ft 1078 c yards at 8 cts	86 24
36 perches of slope wall at 75 cts	27
One bridge \$986, 2 culverts \$250 and 2 cross drains \$22	1258
One road bridge	100
Light grubbing on 31½ chs at \$100 per chain	31 50
	\$6357 58

SECTION 2.

After crossing a run near Mr. Breck's, the line is traced for a few chains along a steep side hill; it then turns Rundel's point, with 17 feet side cutting in solid rock, and terminates on favorable ground.

Embankment at Breck's run on 230 chains, greatest depth 14 feet 1129 cubic yards, at 13 cents,	146 77
Excavation on 9.60 chains, greatest depth 9 feet 1008 cubic yards at 50 cents, and 2010 cubic yards of com- mon excavation at 9 cents,	684 90
Embankment on 3 chains, greatest depth 9.1 ft. 536 c. yards at 12 cents,	64 32
Side excavation on 6 chains, do. 17 ft. solid rock, 1307 cubic yards at 50 cents,	653 50
Side embankment on 3½ chains, greatest depth 11.5 ft. 871 cubic yards at 12 cents,	104 52
Excavation on 27 chains, 3646 cubic yards at 9 cents,	328 14
Embankment on 2½ chains, greatest depth 13 feet 1608 cubic yards at 12 cents,	192 96
Excavation on 8 chains, greatest depth 16 feet 3801 cu- bic yards at 11 cents,	418 11
Embankment on 12 chains, 842 cubic yards at 12 cts.	101 04
Three culverts of 6, 6 and 3 feet,	340 00
Four cross drains,	55 00
Paving embankments 521 square yards at 40 cents per yard,	208 40
Grubbing on 22 chains, at \$1 50	33 00
	\$ 3330 66

SECTION 3.

Near its commencement the line is curved on a steep side hill of solid rock, which it pierces at an average depth of six feet, and after passing in the rear of Mr. Harding's hotel, is traced on favorable ground to a point south of West Philadelphia street, below the permanent bridge, where it terminates.		
Excavation on $18\frac{1}{2}$ chains, average depth 6.5 feet solid rock 3529 cubic yards at 50 cents,		\$1764 50
Embankment on 6 chains, greatest depth 8.4 feet 961 cubic yards at 12 cents,		115 32
Excavation on $3\frac{1}{2}$ chains, greatest depth 4.2 feet 262 cubic yards at 7 cents,		18 34
Embankment on 11 chains, do. 10 feet 5128 cubic yds. at 13 cents,		666 64
Excavation on 45 chains, 5221 cubic yards at 8 cents		417 68
Two culverts of 4 and 3 feet \$110, two x chains \$14		124 00
Grubbing on 18 chains, at \$1 per chain,		18 00
Paving embankment 402 square yards at 40 cents		196 80
		\$ 3,321 28
Total amount for grading road,		13,009 52
To 3 miles of railway, including passing places, gravel for horse path, &c. \$ 4207 84 per mile		12,623 52
To extra for double branch beyond West Philadelphia street,		505 97
Total cost of Branch line,		\$ 26,138 01
Respectfully submitted by		
JOHN WILSON, Engineer.		

Thirdly, "As to the practicability, expediency, and cost of continuing the main railway line from the inclined plane aforesaid, down the west side of Schuylkill, and entering the city by a bridge at any point below the bridge at Harding's."

The line followed on this plan would be the same with that which would be recommended with a view to crossing at Fair Mount as far as the northern entrance of the tunnel. On the last proposed plan, the expense and inconvenience of a tunnel would be avoided; because the rail road might be conducted around the bluff, opposite Fair Mount, if crossing the river at that point is not contemplated, without incurring a greater convexity in any part of the distance than is admitted on other sections of the railroad. The expense of crossing the river, would, however, be much increased in consequence of the increased cost of founding piers, and the necessity of very heavy embankments.

A line crossing opposite Race street on the lowest bridge, which would be admissible, and descending at the greatest rate of graduation, must, nevertheless, be carried as far as Schuylkill Second street, before it would attain the surface of the street, as regulated by the city council. As it must rise from this street to the divid-

ing ground between the Delaware and Schuylkill about twelve feet, it will be readily observed, that it will present a very ineligible profile for a line leading to the Delaware, in comparison with either of the lines above considered. The great objection, however, to this plan, arises from its greater interferences with streets and city arrangements, than any other, and its unnecessarily lengthening the distance to trains of wagons going to the Northern Liberties at any point north of Callowhill street. It appears to us, that no part of the Delaware front presents more advantages for the accommodation of an extensive export trade, or would be more easily attained by branch rail roads, from either the Fairmount location or that of major Wilson, than that part of it immediately north of the street above named. The plan under consideration increases the distance to this part of the Northern Liberties without producing correspondent diminution in that to the city front. Presuming, however, this augmentation of distance to have no prejudicial effect, the large commerce which may be expected to settle north of Callowhill street, would be made unnecessarily to cross this street and Vine street, instead of being conducted, as it might, by a line altogether north of them to the Delaware. When it is recollected, that the former street must always constitute a leading avenue to the city, the advantage of diminishing the necessity of passing it with trains of rail road cars will be at once perceived.

Fourthly, "As to the practicability, expediency, and cost of carrying the main line after crossing the Schuylkill near Peters' island, down that river, so as to terminate on tide water at a point either below the permanent bridge, or between it and the bridge at Harding's."

It has been observed above, that in the event of the execution of the line recommended by major Wilson, it will be advisable so to modify its graduation as to attain 48 chains before reaching picket No. 42, an elevation of thirty-seven feet above high tide. From this point and level, a line was carried along Schuylkill Second street to the river at the end of Chestnut street. The connection with the shipping may be advantageously made by this line. A long embankment, but not very heavy, will be required, and some of the streets intersected must be passed by bridges. These results will not, it is believed, be productive of material inconvenience. At any rate, no other line appears to present less; and a railway to the shipping of the Schuylkill on the east side of the river, to be executed either by the state or a company, cannot in our opinion be dispensed with.

Having answered so far as appeared to us necessary, the several questions presented by you, we now proceed to compare the lines proposed for the continuation of the public road, or as leading lines, with that reported by major Wilson. The plan of crossing between the two bridges, has in our opinion nothing to recommend it but the facility of connecting with shipping west of the Schuylkill. It increases materially the distance to the Northern Liberties, and somewhat increases that to the city front on the Delaware. It

will be more expensive than any plan which has been proposed, and presents greater inconveniences than any other, from an interference with streets.

A line crossing at Fairmount offers equal advantages for connecting with it to every part of the city and its dependencies, between the Delaware and Schuylkill, and reduces the length of the branch recommended by the commissioners, about two miles. This advantage, however, would in our opinion be too dearly purchased, by the increased cost of this location, (\$97,433 21) the increased length of the leading line, (13 chains) and the lasting inconveniences of the tunnel.

It remains to discuss the relative advantages of conducting the line reported by major Wilson to the Schuylkill wharves, or of terminating it at or near the dividing ground between the Delaware and Schuylkill.

There can be, it is believed, no question, that as soon as the termination of the rail road by the commonwealth is definitively settled, individuals or companies will present themselves to undertake the execution of this and other eligible connections with both rivers. There is, therefore, in our opinion, no sort of necessity for the execution of this or any similar line by the commonwealth. The same, however, cannot be said of the proposed continuation of the line to Broad street;—so far, *at least*, it seems to us, it should be executed by the state, because so far it is necessarily the stem of all the connections with the Delaware; and were the line occupied by a company, embarrassing difficulties might be presented in the way of valuable and eligible branch lines.

It is asked in your letter of instructions, of the 7th instant, “Supposing the bridge located by Mr. Hopkins across the Schuylkill, near Fairmount, to be reduced to the least elevation consistent with its safety, what would be the effect of such a change upon the cost of his line? What advantages would a bridge so constructed have for the purposes of communication with the Schuylkill, on the east side, over that proposed by Mr. Hopkins, or over the line adopted by the canal commissioners, on the recommendation of Major Wilson? Would it be practicable to attain the same or nearly the same advantages by so graduating Major Wilson’s line as to reduce its elevation where it approaches nearest to tide water?”

It was deemed unadvisable to cross at Fairmount at a less elevation than 37 feet above high tide, because it was proposed at this elevation to pass the dividing ground between the Delaware and Schuylkill, and it was ascertained that a horizontal plane might be preserved from the foot of the stationary engine, without any material augmentation of expense. The same considerations recommend, in our opinion, that the line reported by Major Wilson should not be graduated to a lower level at the point where it approaches nearest the tide water of the Schuylkill. Undoubtedly a bridge five or six feet lower than that located at Fairmount might be constructed with safety; and the line reported by Major Wilson could be likewise depressed to the same extent below the level we

have contemplated. It is not, however, thought that this reduction in the level of either line would be justified by any increased facilities it would present with a connection with the east side of the Schuylkill.

It appears, however, from the statement of Major Wilson, herewith submitted, that a branch line may be taken from the line reported by him at such a point as to admit of its attaining immediately north of Front street, where it would diverge from his location an elevation three feet more depressed than that of his located line at its point of termination in Broad street, and that the branch may afterwards be conducted either along Front or Ashton streets to Market street, or to tide water, below Chestnut street.

We conclude by stating what we presume has been already inferred, that the line adopted by the board of canal commissioners, crossing opposite Judge Peters', and following the bed of the old Union canal, with the change in its graduation proposed, presents, in our opinion, the most eligible and least expensive route to the city, and at and near its point of termination offers as many facilities for an extensive distribution of, and consequently a full and free competition for the trade of the Columbia rail-road, by branch rail-roads, as any one locality can combine.

We have the honor to be, sir,

Your obedient servants,

MONCURE ROBINSON,
JOHN WILSON,
WM. R. HOPKINS.

I have signed the foregoing report, because in all important particulars it corresponds with my opinion. There is one point, however, upon which I beg leave to explain my views, for fear I may be misunderstood. In speaking of a branch line from Judge Peters', on the west margin of Schuylkill, the necessity of incurring greater curves than are allowed on the main line is spoken of, and it might be inferred, that the branch from this cause would be exposed to serious inconveniencies. I therefore state, that having surveyed such a line, I am satisfied that in one point only would any curvature, more abrupt than in the main line be necessary, namely, at Rundel's point, and even there it might with no important increase of expense be kept within the limit of 400 feet allowed in the Baltimore and Ohio rail-way. Another expression I find it necessary to qualify, that a double branch on the west side would be very expensive. From the notes taken of the survey of the single branch, I am satisfied that a double line, having the same curvatures as the main line, excepting at Rundel's point, where it might be reduced to 400 feet radius, may be constructed all the way from Judge Peters' to the position below the permanent bridge, for \$ 65,000.

JOHN WILSON.

Statement of Major Wilson, referred to in the foregoing report.

With a view to ascertain the practicability of locating a branch line from the trace of the rail-way, in the bed of the old Union canal, along the eastern margin of the Schuylkill river, a level was assumed which would coincide with the head of the east abutment of the bridge at Fairmount, and which was ascertained to be about 27 feet above high water of common tide.

This level will reach a position in Callowhill street, about one chain below its intersection with Schuylkill Front street, and is traced northerly to the old location, at an ascending graduation of 30 feet per mile, and distance of 26 chains. The point where the branch will diverge from the Union canal, will require a depression from its former location, of only 3 feet below what this location is at Broad street. From Callowhill street the branch may be conducted either through Schuylkill Front to Market street, or through Ashton, from its intersection with Vine street, thence to tide water below Chesnut street.

In grading down from Callowhill street, through Schuylkill Front, at a rate of 30 feet per mile, it was ascertained that the slope would pass nine feet under Market street; whence it is inferred, that from the located line in the old Union canal, a branch of the rail-way may be conducted on the eastern margin of Schuylkill river, convenient to the commerce of that river, and accommodating itself to the regulations of streets, both in the district of Spring Garden, and in the city of Philadelphia.

JOHN WILSON, *Engineer.*

**Report from the secretary of the canal commissioners,
on the subject of the further surveys on the Pennsylvania rail way.**

To the Canal Commissioners of Pennsylvania.

It becomes my duty to report the nature and result of certain surveys, which, since the adjournment of the board in December last, have been made with a view to fix the termination of the Pennsylvania rail-way, at or near the city of Philadelphia. It will be recollected, that at the last session of the board, while the report of Major Wilson was under discussion, a member of the Senate, who exhibited some anxiety on the subject, addressed to me in presence of the board, the question, whether any actual survey had been made from the inclined plane near Judge Peters, down the west side of the river, with a view either of crossing at a point lower down the river, or of terminating on that side upon sloop navigation. And the further question, whether any surveys had been made to determine the expediency of carrying the line as located by Major Wilson, from near Fairmount, so as to end on sloop navigation on the east side. My answer was, that Major

Wilson had surveyed the west side far enough below Judge Peters, to satisfy him, that it would afford a less eligible line than the one selected, and no farther. That in the same way the examination on the east side had been confined to the general question of eligibility, and that time had not permitted an accurate survey of every mode of passing into the city, which might have been suggested. The board will further recollect, that the want of more particular surveys was then urged as an argument why the board should stop their location at Judge Peters', until an opportunity could be afforded for more particular investigation. The answer to this argument, and the principle upon which the board proceeded, was, that by the terms of the law, they were bound to locate a complete line to the city, before they proceeded to enter into contracts for any part, but that by restricting the order for contracts to the west side of the Schuylkill, they might at any future time correct or improve the mode of entering the city recommended by Major Wilson. It was then understood by me, and it doubtless was the intention of the board, that a convenient opportunity for testing the correctness of Major Wilson's plan should be embraced, and that every survey tending to that object, or calculated to satisfy the public mind, should be made, in the mode and under the authority recognized by the practice of the board. I am thus particular in recalling the recollection of the board to the occurrences of the last meeting; because, in the excitement to which these questions have given rise, my authority as the agent of the board, to direct those surveys has been impeached, and I am anxious of course, that the truth of the case should be placed on record under their immediate sanction. After the adjournment I returned to Philadelphia, with the general impression derived from conversations at the board, that the several examinations spoken of in the vicinity of the city, were to be made by the engineer under my direction; but with no idea that it was necessary to make them during the winter season. In the latter end of December, I was called upon by the same gentleman, who had appeared before the board, who urged the necessity of making those surveys at the earliest possible time. I stated in reply, that the attention of the engineer was then occupied in the preparation of his line for contracts, and that he would probably have no time to spare until the closing of the contracts on the 27th of January. The request was repeated more than once, and with the appearance of so much anxiety, that I determined immediately to issue instructions to the engineer, requiring him at the earliest moment within his power to proceed to the execution of the surveys referred to. These instructions bear date on the second of January, and a copy was furnished at the same time to the gentleman at whose solicitation they were prepared. For about ten days after this time, the engineer was constantly occupied in the staking out of the portion of the rail-road, ordered to be contracted for, and there seemed no probability that himself, or his assistants, could be spared from that duty within the month of January.

A resolution was offered in the Senate about the sixth of January, the object of which seemed to be to stop the rail road as a state work, on the west side of Schuylkill, and to leave its continuation into the city of Philadelphia to individual enterprise. The appearance of this resolution, and of the discussion which took place upon it in the public prints, naturally excited great feeling in Philadelphia. I found myself overwhelmed with inquiries on the subject, and I soon felt, that to furnish information to the public, and that too with the least possible delay, had become an imperative duty. Two engineers in the service of the board, Messrs. Robinson and Hopkins, the nature of whose employment placed them under my immediate direction, were then in the city, and not occupied by any business of an urgent nature. In the state of anxiety evinced by the public, it seemed to me important to add weight to the opinion which might be expressed on the subject, and thus, as soon as possible, to remove alarm or misapprehension. I therefore requested those gentlemen to join with Major Wilson, in the execution of the instructions previously given to him, and I added, from time to time, such further directions as to embrace all the points upon which public opinion appeared to be divided. In order that the regular operations of the rail road line might not be stopped, I directed Mr. Hopkins, with the party who had served under him on the Cumberland survey, to take charge of the field operations. This he did, except upon the location of a branch line from Judge Peters' to sloop navigation, on the west side, which was conducted by Major Wilson. The other engineers visiting the work often enough to form a just idea of the location, and carefully viewing all the ground. The necessary surveys being completed, the three engineers, after full consultation and comparison of opinions, prepared and delivered to me the report which accompanies this paper. It is proper I should state, that all my arrangements in relation to these subjects were promptly communicated to the president of the board, and received his approbation. During the period while the examination was in progress, he visited Philadelphia, and I took that opportunity to show him the ground, and obtain the benefit of his opinion in aid of my own. At a town meeting of citizens of Philadelphia, a committee was appointed to examine and report upon the several questions arising upon the termination of the rail road. This committee called upon me very frequently for information, and finally requested that I would reduce to writing, for their use and that of their constituents, all such views of the subject as had occurred to me. I did so at full length, in a letter, of which a copy is now furnished to the board. I am aware that it is not such a document as can regularly be placed upon file; but as I undertook in that letter to explain the views which governed the board in the location of the railway, it is proper they should have an opportunity of examining it, and of correcting any misrepresentation of their opinions.

Respectfully submitted,

JOSEPH M'ILVAINE, *Secretary.*

Harrisburg, March 25th, 1829.

Philadelphia, Saturday evening, February 7, 1829.

To Messrs Wilson, Robinson and Hopkins, engineers, &c.

GENTLEMEN—I have to request, that in addition to the matters contained in the sketch of a report exhibited to me this morning, you will answer as clearly as possible the following questions:

1st. How far the estimate of the cost of a branch line from Judge Peters' to sloop navigation, on the west side of Schuylkill, may be reduced by assuming a lower level than would be necessary for crossing the river, by constructing a single track rail-way with suitable turns out, or by admitting a greater boldness of curvature than would be proper on a main line of communication.

2d. Supposing the bridge located by Mr. Hopkins across the Schuylkill, near Fairmount, to be reduced to the least elevation consistent with its safety, what would be the effect of such a change upon the cost of his line? What advantages would a bridge so constructed have for the purposes of a communication with the Schuylkill, on the east side, over that proposed by Mr. Hopkins, or over the line adopted by the canal commissioners, on the recommendation of Major Wilson? Would it be practicable to attain the same, or nearly the same advantages, by so graduating Major Wilson's line as to reduce its elevation where it approaches nearest to tide water? Taking all these circumstances into consideration, and having reference to a connexion as well with the navigation of the Delaware, as with that of the Schuylkill, what plan would you recommend as on the whole the most advisable? These latter questions are suggested to meet the views expressed in conversation to-day by Mr. Harper, one of a committee appointed at a public meeting of the citizens of Philadelphia; and I am not without the hope that they may be so answered as to prevent any serious conflict of interests on this side of the Schuylkill.

I am aware that some farther examinations on the ground will be necessary, and Major Wilson will provide a party for the purpose on Monday morning. It is particularly desirable that the course of a line crossing the Schuylkill, at Fairmount, at the least elevation admissible for a bridge, and extending thence in a direction the most favorable for a junction with sloop navigation, shall be distinctly ascertained. The materials for comparing this line with that of Major Wilson and with one crossing at Fairmount, with the elevation proposed by Mr. Hopkins, will then be complete.

Very respectfully,

Your obedient servant,

JOSEPH M'ILVAINE,

Secretary Canal Commissioners.

*Instructions to Major Wilson.**Philadelphia, January 2, 1829.*

DEAR SIR—You are requested to examine the two sides of the Schuylkill river, from Peters' island to a point below the permanent bridge, with a view to determine the following questions:

1st. The practicability and cost of a branch line from the inclined plane, near Judge Peters', to a point on the sloop navigation of the Schuylkill, below the permanent bridge.

2d. The practicability, expediency and cost, of continuing the main railway line from the inclined plane aforesaid, down the west side of Schuylkill, and of entering the city by a bridge at any point below the bridge at Harding's.

3d. The practicability, expediency and cost, of carrying the main line, after crossing the Schuylkill near Peters' island, down that river so as to terminate on tide water, at a point either below the permanent bridge or between it and the bridge at Harding's.

In making your examinations with reference to the second question, you will be particularly careful to sound the bed of the river between the two bridges, and ascertain the facilities it affords for the erection of a bridge. You will also ascertain the practicability of extending the rail-road, after it crosses by the bridge, either in a direction towards the Delaware, or up and down the Schuylkill.

You are requested also to institute a comparison between the two routes for the main rail-way suggested in these instructions, and that which has already been recommended; shewing the advantages and disadvantages attending each; to which you give the preference, and your reasons for such preference.

I shall hope to receive a full report from you on these subjects at an early day, accompanied with accurate estimates of the cost of the several plans proposed; and with explanations how far the routes, or either of them, if adopted, will have a tendency to destroy private property, or to disturb the regulations of the public streets.

Very respectfully,

JOSEPH M'ILVAINE,
Secretary, &c.

To Moncure Robinson and W. R. Hopkins, Esqs. engineers in the service of the state of Pennsylvania.

Gentlemen,—Enclosed is a copy of certain instructions recently issued to Major Wilson, engineer of the Pennsylvania rail-road, requiring some further examinations to be made with a view to the termination of that improvement within, or near the city of Philadelphia. Since these instructions were issued, I have deemed it proper in the execution of the duties assigned me by the

canal commissioners to combine for the inquiry, all the professional skill within my control; and I have therefore to request, that you will consider yourselves associated with Major Wilson, in the investigation contemplated by the paper enclosed, so far as to form an opinion upon the merits of the several plans which have been suggested. In addition to the points therein referred to, your attention is requested to a route subsequently proposed, which contemplates a bridge across the Schuylkill near Fairmount dam, and an extension thence either down the Schuylkill, or in a direction towards the Delaware, or both.

You will take the earliest opportunity of conferring with Major Wilson, and of passing with him over the ground in order to obtain the necessary explanations, and to decide what further surveys will be required, as the basis of an opinion. Mr. Hopkins, with the members of his party now in the city, and with such further aid as he may have occasion for, will execute these surveys. As soon as they are completed, you will again confer with Major Wilson, and will report your opinions either jointly or separately, as may be found necessary.

Very respectfully,

Your obedient servant,

JOS. M'ILVAINE,

Sec'ry Can. Com.

Office of the Canal Commissioners,
January 14, 1829.

